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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/808,952

03/25/2004

Nelson Diaz

2004P50028US/I331.134.101

6355

25281

7590

02/17/2006

DICKE, BILLIG & CZAJA, P.L.L.C.

FIFTH STREET TOWERS

100 SOUTH FIFTH STREET, SUITE 2250

MINNEAPOLIS, MN 55402

EXAMINER

VAN ROY, TOD THOMAS

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 02/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

HA

Office Action Summary	Application No. 10/808,952	Applicant(s) DIAZ, NELSON	
	Examiner Tod T. Van Roy <i>[Signature]</i>	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>03/25/2004</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities:

Pages 7 and 8 list the PNP transistors found in figure 4, and incorrectly list #350 instead of #370.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8 and 15-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Diaz et al. (US 2002/0064193).

With respect to claims 1 and 5-6, Diaz discloses a laser driver comprising: a PNP transistor current source (fig.13a upper left, also a current mirror), an inductor coupled to the PNP transistor current source (fig.13a #809); a switch coupled to the inductor (fig.13a #838, NPN); and a current sink coupled to the switch (fig.13a #834), wherein the PNP transistor current source supplies a first current to a laser if the switch is closed and a second current to the laser if the switch is open (as this circuit is the same as the claim limitations, and fig.4 of the applicant's specification, it is inherent that the operation would be the same) and wherein the PNP transistor current source, inductor,

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switch, and current sink are on a single semiconductor chip ([0030], stating the laser driver may be implemented on a single chip).

With respect to claims 2-3, Diaz further discloses the inductor size influences the frequency response of the PNP current source, and reduces intersymbol interference ([0088-90], also inherent as the circuit and inductor placement are the same as the instant invention).

With respect to claim 4, Diaz further discloses the currents to be a bias current and modulation current (abs.).

With respect to claim 7, Diaz further discloses the laser is a laser diode ([0001], VCSEL).

With respect to claim 8, Diaz further discloses the switch to open and close in response to a data signal (fig.13a through input #832, also inherent that a switch would open and close in response to a data signal).

With respect to claims 15-19, and 21, Diaz discloses a method for driving a laser comprising: receiving a data signal (fig.13a #832), operating a switch in response to the data signal (fig.13a #838, NPN), supplying a first current (bias+modulation) from a PNP transistor current source (fig.13a upper left, current mirror) through an inductor (fig.13a #809) minus a second current (modulation) to a laser if the switch is closed (when closed the modulation current is pulled down by #834 and is not supplied to the laser), supplying the first current from the PNP transistor current source through the inductor to the laser if the switch is open (when switch is open, both currents will flow to the laser).

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With respect to claim 20, Diaz further discloses that when the switch is closed to drive the laser to output a logic low (only bias applied, logic low) optical signal and the switch is opened to drive the laser to output logic high (both currents applied, logic high).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 9-14 and 22-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diaz in view of Preisach (US 2005/0276290).

With respect to claim 9, Diaz teaches the laser (VCSEL) driver outlined in the rejection to claim 1, including a second transistor (NPN) switch (fig.13a #830). Diaz does not teach an additional PNP current source and inductor to be coupled to the second switch, or the laser diode to be driven differentially. Preisach teaches a laser

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driver which uses a differentially driven laser diode (fig.2). It would have been obvious to one of ordinary skill in the art at the time of the invention to couple an additional PNP current mirror and inductor of Diaz to the second switch to allow for an additional degree of control over the diode modulation switching, as well as to differentially drive the laser diode as taught by Preisach in order to allow for the use of VCSELs having low differential resistance (Preisach, [0023-28]).

Claim 10 is rejected for the same reasons as claim 6 above.

Claim 11 is rejected for the same reasons as claim 8 above.

Claim 12 is rejected for the same reasons as claim 27 above.

Claim 13 is rejected for the same reasons as claim 3 above.

Claim 14 is rejected for the same reasons as claim 1 above.

With respect to claims 22-28, Diaz and Preisach teach the laser driver as outlined in the rejection to claim 9, and Diaz further teaches the method of operating the laser driver as in the rejection to claims 15-21, which after the addition of the second PNP current mirror and inductor (with similar operation), would read on claims 22-28.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TVR



MINSUN OH HARVEY
PRIMARY EXAMINER